



Attorney Docket No. STR0001  
Client/Matter No. 19678.0004

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

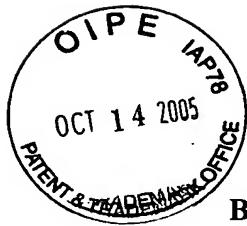
Serial No. 10/721,940	Confirmation No.: 8310
Application of: Coppom et al.	Customer No.: <b>25235</b>
Filed: November 25, 2003	
Art Unit: 1724	
Examiner: CHIESA, Richard	
Attorney Docket No. STR0001	
For: ELECTRICALLY ENHANCED AIR FILTRATION WITH IMPROVED EFFICACY	

Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Appellant hereby Appeals from the Examiner's final rejection mailed  
February 15, 2005.

10-17-05

AP/  
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**APPELLANT'S SUPPLEMENTAL BRIEF UNDER 37 CFR 1.193(b)(2)**

**I. Real Party in Interest**

StrionAir, Inc.  
410 S. Arthur Avenue  
Louisville, CO

**II. Related Appeals and Interferences**

No other appeals or interferences are currently known to Appellant that will directly affect, be directly affected by, or have a bearing on the decision to be rendered by the Board of Patent Appeals and Interferences in the present appeal.

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### **III. Status of Claims**

Claims 1-24 are pending and are on appeal. No claims have been allowed.

### **IV. Status of Amendments**

No amendments have been made subsequent to the final office action.

### **V. Summary of the Claimed Subject Matter**

Independent claim 1 describes a filter assembly 111 described, for example, in paragraph [0032]. The filter assembly includes fibrous filter media 201 in Fig. 2 and a conductive electrode 113 affixed to the fibrous filter media. The conductive electrode 113 in Fig. 2 and 213 in Fig. 5 makes physical contact to the fibrous filter media 111 in a plurality of substantially planar locations as most readily visible in Fig. 5 as described, for example, in paragraphs [0033]-[0034] and [0039] among other locations.

Independent claim 12 describes a method for making a filter media assembly 111 by providing a fibrous filter media 111 described, for example, in paragraph [0032]. A substantially planar conductive electrode is affixed to the fibrous filter media as shown and described with reference to Fig. 3 and Fig. 4 in paragraph [0042], for example. The conductive electrode physically contacts the fibrous filter media at a plurality of locations as described, for example, in paragraphs [0033]-[0034] and [0039] among other locations in the description.

Claim 17 describes an air filtration system shown generally in Fig. 1 having a blower 119 and a fibrous filter media 111 having a conductive electrode 113 affixed to the fibrous filter media as shown and described with reference to Fig. 3 and Fig. 4 in paragraph [0042]. The conductive electrode makes physical contact to the fibrous filter media in a plurality of substantially planar locations as described, for example, in paragraphs [0033]-[0034] and [0039]. An electrical connection couples the conductive electrode 113 and a voltage source 115 as shown in Fig. 1.

Claim 23 describes a method for removing particulates from air shown generally in Fig. 1. Air flow is directed through a filter media as described in paragraph [0029]. A substantially uniform electric field is established across the filter media as described in paragraph [0029] and particles are collected on the filter media, Charge in a collected particle is distributed to the filter media 111 as described in

reference to Fig. 6A-6C, and the charge from the filter media 111 is collected using an electrode 113/213 that is physically coupled to the filter media 111. The collected charge is coupled to a power supply or ground or opposite polarity as shown and described at paragraph [0035], for example.

Independent claim 24 describes a device, comprising an electrically enhanced air filter, the device having a functional unit configured to perform a specific function using purified air such as functional units described in paragraph [0003] of the specification. The electrically enhanced air filter includes fibrous filter media 201 in Fig. 2 and a conductive electrode 113 affixed to the fibrous filter media. The conductive electrode 113 in Fig. 2 and 213 in Fig. 5 makes physical contact to the fibrous filter media 111 in a plurality of substantially planar locations as most readily visible in Fig. 5 as described, for example, in paragraphs [0033]-[0034] and [0039] among other locations. Claim 24 further includes an electrical connection coupling the conductive electrode and a voltage source or ground as shown and described in reference to Fig. 1.

## **VI. Grounds of Rejection to be Reviewed on Appeal**

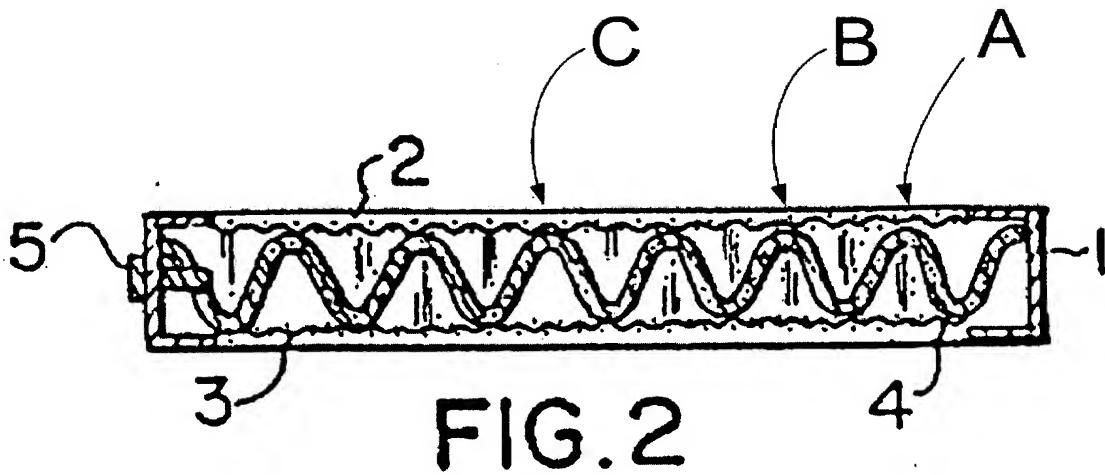
- A. Claims 1, 9-12, 15 and 16 were rejected under 35 U.S.C. 102 as anticipated by or obvious over Pick.
- B. Claims 2-6, were rejected under 35 U.S.C. 102 as anticipated by or obvious over Pick.
- C. Claims 7, 8 and 13 were rejected under 35 U.S.C. 103 obvious over Pick in view of Joannou et al.
- D. Claim 14 was rejected under 35 U.S.C. 103 obvious over Pick in view of Joannou et al. and further in view of Stemmer.
- E. Claims 17-22 were rejected under 35 U.S.C. 103 obvious over Pick in view of Coppom.
- F. Claim 23 was rejected under 35 U.S.C. 103 obvious over Pick in view of Coppom.
- G. Claim 24 was rejected under 35 U.S.C. 103 obvious over Pick in view of Chapman.

## **VII. Argument**

- A. Claims 1, 9-12, 15 and 16 were rejected under 35 U.S.C. 102 as anticipated by or obvious over Pick.

Independent claim 1 calls for, among other things, a conductive electrode that makes physical contact to the fibrous filter media in a plurality of substantially planar locations. This is not shown or suggested in Pick. Indeed, the haphazard coupling shown in Fig. 2 of Pick does not convey a need or desire to make physical contact to the fibrous filter media in a plurality of substantially planar locations. Some connections are made towards the pleat tips, some are made at an unspecified distance upstream of the pleat tips. In some areas the coupling is not accomplished at all.

Specifically, Pick does not show or suggest, in either the '372 or the '470 patent, affixing an electrode to the fibrous filter media as called for in claim 1. In this enlarged copy of Fig. 2 from Pick:



it is clear that at the point labeled "A" there is no contact between element 2 and element 4. At the point labeled "B" it is questionable what type of contact is present, and at the point labeled "C" contact clearly occurs on either side of the peak of the pleat. As a result, the points of contact do not lie in a plane. Instead, contact is made below the pleat peak at some location, and contact is not made at all in other locations.

Significantly, Fig. 2 demonstrates that at least at the region labeled "A" element 2 cannot be affixed to element 4 because they do not even touch. Nothing in the text of the Pick reference suggests any mechanism, means or substance that would affix element 2 to element 4. It is maintained that these elements will, at best, haphazardly or incidentally make contact with each other (or fail to make contact with each other) in a manner that will change constantly during and after installation of a filter in an air handling assembly. This arrangement does not show or suggest the physical contact that is maintained by affixing the conductive electrode to the fibrous filter media as called for in claim 1.

For at least these reasons, Pick does not show or suggest independent claim 1. Claims 9-11 are distinct from Pick for at least the same reasons as claim 1.

Independent claim 12 calls for an activity of affixing a substantially planar conductive electrode to the fibrous filter media such that the conductive electrode physically contacts the fibrous filter media at a plurality of locations. Claim 12 is distinct from Pick at least because Pick does not show or suggest affixing the electrode

to the media, nor does Pick show or suggest performing the activity of affixing called for in claim 12. Pick's Fig. 2 would seem to make affixing impossible because the electrode does not even touch the pleats in certain locations. Claims 15 and 16 that depend from claim 12 are believed to be allowable for at least the same reasons as claim 12.

**B. Claims 2-6 were rejected under 35 U.S.C. 102 as anticipated by or obvious over Pick.**

Claims 2-6 and 9-11 that depend from claim 1 are believed to be allowable over Pick for at least the same reasons as claim 1. Further, the particular limitations of claims 3-5, 9 and 11 are not shown or fairly suggested by the Pick reference. For example, claim 3 calls for the conductive electrode to make contact at the pleat tips. Fig. 2 of Pick shows electrical contact, when made at all, made at a variety of locations. More to the point, Pick does not explicitly teach that the contact should be made at the pleat tips. Without this specific teaching one would not know how important this characteristic is. Hence, even if Pick were to show an incidental contact at a pleat tip, without some explicit teaching as to the importance one would not know to control manufacture to achieve the limitations set out in claim 3. Similarly, Pick does not show or suggest a substantially planar electrode called for in claim 4.

Claim 5 calls for the conductive electrode to deviate by no more than one millimeter from planar. This very specific limitation is simply not shown or suggested in Pick.

Based on the above remarks, Appellant requests that the rejection of claims 2-6, and 9-11 be reversed.

**C. Claims 7, 8 and 13 were rejected under 35 U.S.C. 103 obvious over Pick in view of Joannou et al.**

Claims 7, 8 and 13 were rejected under 35 U.S.C. 103 obvious over Pick in view of Joannou et al. This rejection is respectfully traversed. Claims 7, 8 and 13 are distinct over Pick for the reasons set out above with respect to claims 1 and 12 from which they depend, respectively. Joannou et al. do not show or suggest affixing the

electrode to the media, nor do Joannou et al. show or suggest performing the activity of affixing so as to result in the particular contact locations called for in claim 12.

The Joannou reference shows the use of glue beads. However, claims 7 and 8 call for the glue beads to form a protrusion when crossing a pleat tip and a conductive electrode affixed by the protrusion. Fig. 5, which is a view taken looking down on the pleat tips, clearly shows electrode 7 positioned on one side of the pleat tip. Fig. 6 is a not a section taken through the pleat tips. However, this view does show that the glue bead 7 is never used to affix the conductor 7 to a protrusion of the glue bead at the pleat tip. Fig. 3A-3C also show various embodiments clearly illustrating the fold lines, at which pleat tips would occur, and the manner in which the conductive elements 7 never cross the fold lines (pleat tips).

Based on the above remarks, Appellant requests that the rejection of claims 7, 8 and 13 be reversed.

**D. Claim 14 was rejected under 35 U.S.C. 103 obvious over Pick in view of Joannou et al. and further in view of Stemmer.**

Stemmer does not show or suggest the deficiencies of the Pick and Joannou et al. references noted above, claim 14 is believed to be allowable. Based on the above remarks, Appellant requests that the rejection of claim 14 be reversed.

**E. Claims 17-22 were rejected under 35 U.S.C. 103 obvious over Pick in view of Coppom.**

Independent claim 17 calls for a conductive electrode making physical contact to the fibrous filter media in a plurality of substantially planar locations. As noted above, Pick does not show or suggest affixing the electrode to the media to provide a substantially planar contact called for in claim 17. Coppom, which is the same inventor as the instant application, does not supply the deficiencies of Pick. Coppom does not show or suggest affixing the electrode to the media to provide a substantially planar contact called for in claim 17. Coppom is apparently relied upon to show conducting charge to a power supply or ground. While the Coppom reference involves conducting coupling a downstream electrode to ground for purposes of establishing a field, this function would not conduct charge because the back electrode does not make an

electrical connection to any charge carriers. Coppom teaches that the downstream electrode is part of an open circuit that is sufficient for establishing the desired electric field, but is not taught to conduct charge.

Claims 18-22 that depend from claim 17 are allowable over Pick in view of Coppom for at least the same reasons as claim 17 as well as the additional limitations expressed in claims 18-22.

Based on the above remarks, Appellant requests that the rejection of claims 17-22 be reversed.

**F. Claim 23 was rejected under 35 U.S.C. 103 obvious over Pick in view of Coppom.**

With respect to independent claim 23, the final Office action does not state any portions of the relied on combination of references that show or suggest establishing a substantially uniform electric field. The advisory action does not address this deficiency. Hence this element of claim 23 has never been rejected because a prima facie case of obviousness has never been stated. Based on the above remarks, Appellant requests that the rejection of claim 23 be reversed.

**G. Claim 24 was rejected under 35 U.S.C. 103 obvious over Pick in view of Chapman.**

Claim 24 calls for, among other things, a conductive electrode affixed to the fibrous filter media, wherein the conductive electrode makes physical contact to the fibrous filter media in a plurality of substantially planar locations. As noted above, these features of claim 24 is not shown or suggested by the relied on references. Chapman does not supply this deficiency of Pick.

Based on the above remarks, Appellant requests that the rejection of claim 24 be reversed.

**Conclusion**

In view of all of the above, claims 1-24 are believed to be allowable and the case in condition for allowance. Appellant respectfully requests that the Examiner's rejections be reversed for all pending claims.

Respectfully submitted,



Date: October 14, 2005

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Stuart T. Langley, Reg. No. 83,640  
HOGAN & HARTSON LLP  
One Tabor Center  
1200 17<sup>th</sup> Street, Suite 1500  
Denver, Colorado 80202  
Phone: (720) 406-5335  
Fax: (720) 406-5301

## **VIII. APPENDIX OF CLAIMS ON APPEAL**

1. A filter assembly comprising:
  - a fibrous filter media; and
  - a conductive electrode affixed to the fibrous filter media, wherein the
- 5 conductive electrode makes physical contact to the fibrous filter media in a plurality of substantially planar locations.
2. The filter assembly of claim 1 wherein the fibrous filter media comprises a pleated fabric.
3. The filter assembly of claim 1 wherein the fibrous filter media comprises a plurality of parallel pleats defining pleat tips on one surface and wherein the conductive electrode physically contacts the fibrous filter media at the pleat tips.
4. The filter assembly of claim 1 wherein the conductive electrode is substantially planar.
5. The filter assembly of claim 1 wherein the conductive electrode deviates no more than one millimeter variance from planar.
6. The filter assembly of claim 1 wherein the fibrous filter media is substantially nonconductive.
7. The filter assembly of claim 1 wherein the fibrous filter comprise:
  - a pleated fabric having a plurality of plurality of parallel pleats;
  - a plurality of glue beads running in a direction non-parallel with respect to the pleats, wherein the glue beads form a protrusion when crossing a pleat tip; and
- 5 wherein the conductive electrode is affixed to the fibrous filter by the protrusion of the glue bead.
8. The filter assembly of claim 7 wherein the glue bead is substantially non-conductive.
9. The filter assembly of claim 1 further comprising a supporting frame surrounding the fibrous filter media and exposing an upstream surface and a downstream surface of the fibrous filter media, wherein the conductive electrode is

affixed to contact only certain points of the downstream surface of the fibrous filter  
5 media.

10. The filter assembly of claim 1 wherein the filter assembly is  
disposable.

11. The filter assembly of claim 1 wherein the conductive electrode makes  
sufficient physical contact to the fibrous filter media to collect electrical charge  
imparted anywhere on the fibrous filter media.

12. A method for making a filter media assembly comprising:  
providing a fibrous filter media;  
affixing a substantially planar conductive electrode to the fibrous filter media  
such that the conductive electrode physically contacts the fibrous filter media at a  
5 plurality of locations.

13. The method of claim 12 further comprising:  
pleating the fibrous filter media using a glue bead to stabilize the pleats,  
wherein the act of affixing the conductive electrode comprises using the glue bead to  
affixing the conductive electrode.

14. The method of claim 12 wherein the fibrous filter media comprises a  
pleated media having a glue bead running across and intersecting tips of pleats, and  
the method further comprises:

heating the glue bead; and  
5 pressing the conductive electrode into the heated glue bead to affix the  
conductive electrode to the pleated media.

15. A filter assembly made according to the method of claim 12.

16. An air filtration system including a filter assembly made by the method  
of claim 12.

17. An air filtration system comprising:  
5 a blower;  
a fibrous filter media;

a conductive electrode affixed to the fibrous filter media, wherein the conductive electrode makes physical contact to the fibrous filter media in a plurality of substantially planar locations; and

10           an electrical connection coupling the conductive electrode and a voltage source.

18.       The air filtration system of claim 17 wherein the conductive electrode makes sufficient physical contact to the fibrous filter media so as to collect charge imparted on the fibrous filter media.

19.       The air filtration system of claim 17 further comprising an upstream electrode.

20.       The air filtration system of claim 17 further comprising an upstream pre-charge unit.

21.       The air filtration system of claim 17 further comprising wherein the filter media is substantially non-conductive.

22.       The air filtration system of claim 17 further comprising wherein the conductive electrode is substantially planar.

23.       A method for removing particulates from air comprising:  
          directing air flow through a filter media;  
          establishing a substantially uniform electric field across the filter media;  
          collecting particles on the filter media, whereby charge in a collected particle  
5       is distributed to the filter media;  
          collecting the charge from the filter media using an electrode that is physically  
coupled to the filter media; and  
          conducting the collected charge to a power supply or ground or opposite  
polarity.

24.       A device, comprising an electrically enhanced air filter, the device comprising:

          a functional unit configured to perform a specific function using purified air;

an electrically enhanced air filter positioned upstream of an airflow to the functional unit, the electrically enhanced air filter comprising:

a fibrous filter media;

a conductive electrode affixed to the fibrous filter media, wherein the conductive electrode makes physical contact to the fibrous filter media in a plurality of substantially planar locations; and

an electrical connection coupling the conductive electrode and a voltage source or ground.